

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

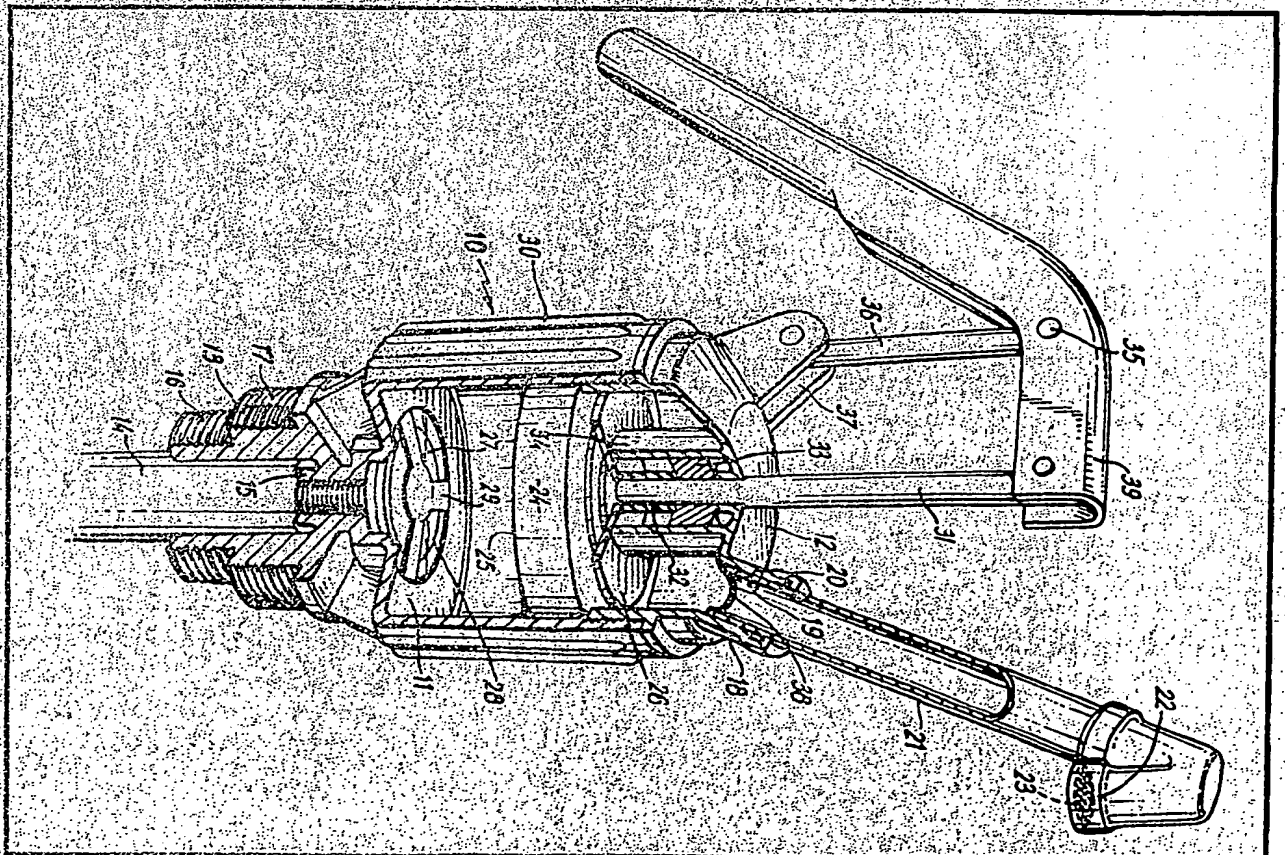
(12) UK Patent Application (19) GB (11) 2 023 715 A

(21) Application No 7827780
(22) Date of filing
23 Jun 1978
(23) Claims filed
18 Jun 1979
(43) Application published
3 Jan 1980
(51) INT CL³ F04B 21/04
21/08 // 9/14 19/04
(52) Domestic classification
F1A 1A3 1C1 3A1B 4E2
4G 4H 4L 4S4
(56) Documents cited
GB 1428338
(58) Field of search
F1A
(71) Applicant
Le-Cas Limited
Catherine Street
Bowsey Industrial Estate
Warrington WA5 5LH
(72) Inventor
Karl Willis
(74) Agents
Mr E R Medlock

(54) Drum pump

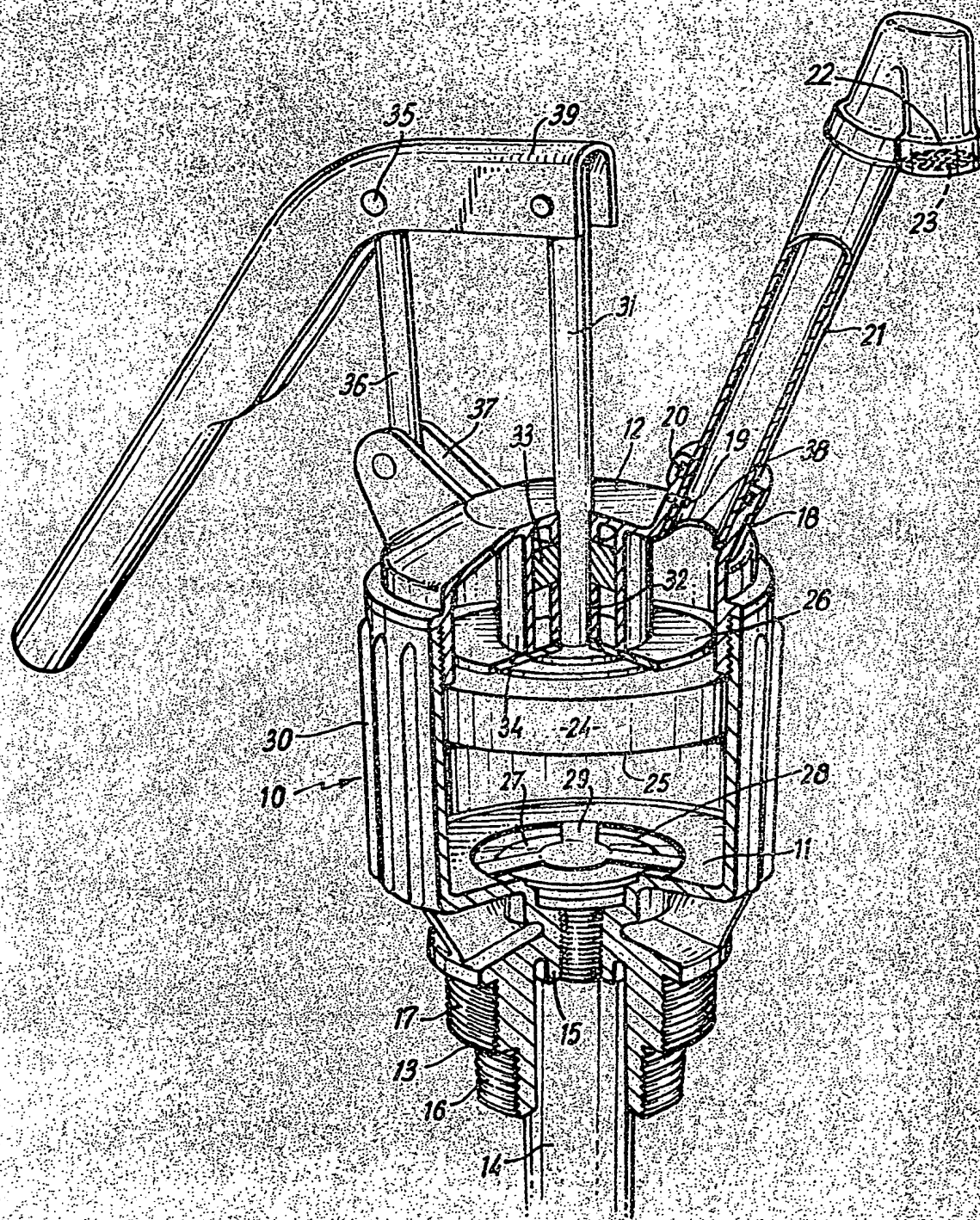
(57) A drum pump having a die-cast cylinder body (10) with an integral externally threaded inlet boss (13) at the bottom for receipt of a suction tube (14), a screw-in top (12) having an integral outlet (20) which detachably receives, by means of a bayonet connection (19), a discharge pipe (21) having a discharge nozzle (22). Different configurations of discharge pipe and nozzle can be used. The boss (13) is suitable for connection to an oil drum outlet. A clack valve (27) controls the inlet to the pump and a clack valve (26) carried by piston (24) controls the outlet. The piston can be reciprocated by handle (39). The piston which has a feather edge (25), co-operates with the internal surface of

the cylinder body (10) and the body has a small internal taper from top to bottom.



GB 2 023 715 A

2023715



SPECIFICATION

Drum pump

5 This invention relates to pumps.

The invention is concerned with improvements in the type of pump known as the drum pump. Such pumps have mainly been used for the discharge of petroleum products from drums either to a hose or to a free-standing vessel.

10 One known form of drum pump comprises: a screwed boss for fitting into a hole in the top of a drum; a suction tube for passing through the boss so that it dips into the drum; a clamping screw in the boss so that the suction tube and hence the pump can be held above the drum; a cylinder body screwed to the suction tube and open at the bottom, via a clack valve disc, to the suction tube and open at the top to a discharge pipe and nozzle; a piston, reciprocable in the cylinder and carrying a clack valve disc; and means for manually reciprocating the piston.

15 This known form of pump has a number of disadvantages: it is not very secure when mounted in a drum as it relies for securement on the rather loose fit of the suction tube in the boss; it is not in leak-tight relationship with the drum and water can enter the drum between suction tube and boss; in order to take the discharge nozzle to a good height above the top of a drum, so that a receiving vessel can be located below the nozzle whilst free standing on the drum, the pump has to be situated high above the drum and accordingly the suction tube can be subject to excessive bending; the construction of the known pump is of a form which does not lend itself to cheap production methods and is usually made of materials, such as steel, which can rust; and the suction tube has to be constructed as a structural member.

20 A drum pump according to the present invention is characterised in that the pump body is fabricated from a pressure die-cast material with a slight internal cylinder taper; the body has an integral threaded boss at its base for fitting the pump to a drum; the discharge pipe extends upwardly from the top of the body and has a discharge nozzle pointing downwardly; the discharge pipe and nozzle are readily demountable from the pump body so that alternative configurations of pipe and nozzle can be used; and the piston is of an inert plastics material with a feather edge so that the piston is rigid except that the edge is capable of accommodating the internal taper of the body whilst providing self-priming action.

A pump according to the present invention will now be described by way of example with reference to the accompanying drawing which is a cut away perspective view of the pump.

25 The pump shown has a modular pressure

die-cast zinc body 10 with an integral base 11 and a screw on top 12. The body has an internal taper of 0.15mm. An integral boss 13 exists at the base of the body and a

30 telescopic suction tube 14 is shown attached to a threaded internal boss 15. The boss 13 has two threaded portions 16, 17 to allow for fitting of the pump into Imperial or Metric apertures. The top 12 has an outlet neck 18 with a bayonet peg 19 and a sealing ring 20. A discharge pipe 21 is shown fitted in the neck so that it extends upwardly from the body 10. The pipe 21 has a discharge nozzle 22 pointing downwardly. The nozzle 22 carries a disc 23 or expanded metal across its mouth and this assists in drip avoidance.

The piston 24 is made of an inert "Nylon" material and it has a feather edge 25. Mounted on the piston and above it, in the well known manner, there is a clack valve disc 26. A bottom clack valve disc 27 is trapped loosely in a cavity 28 by a three-armed spider 29 which is peened at the rim of the cavity. The cylinder part of the body 10 has vertical ribbing 30 to provide a non-slip grip surface for mounting the pump in a barrel by hand without the use of tools. The piston 24 is reciprocable by means of a rod 31 movable in a seal 32 and guided by a bearing 33 in a skirt 34 depending from the lid 12. The rod 31 is pin-jointed to a handle 34 which can pivot about a pin 35 on a rod 36 carried on a bracket pair 37. The bearing 33 provides a large bearing surface and avoids concentration of stresses in the top 12. A rim 38 controls the depth of insertion of the pipe 21 in the neck 18.

CLAIMS

105 1. A drum pump comprising a cylinder having, in use, an upper and lower end and with an internal downward taper, an externally threaded boss at the lower end for receipt in a threaded aperture in the top of a drum, an inlet passage through the boss to the cylinder, an outlet from the cylinder at the upper end, a discharge pipe detachably connected to the outlet and extending upwardly and outwardly from said upper end and terminating at a downwardly directed discharge nozzle, and a piston movable in said cylinder, the piston having a feather edge to accommodate the cylinder taper and provide a self-priming action.

120 2. A pump as claimed in claim 1 including an internal boss in said inlet passage to accept a suction pipe making a flow connection with the inlet passage.

125 3. A drum pump as claimed in claim 1 or 2 including a bayonet coupling between the discharge pipe and the outlet, and a seal preventing liquid escape between the outlet and discharge pipe.

4. A drum pump as claimed in any preceding claim in which the cylinder is made of

pressure die-cast material.

5. A drum pump substantially as hereinbefore described with reference to the accompanying drawing.

Printed for Her Majesty's Stationery Office
by Burgess & Son (Abingdon) Ltd.—1980
Published at The Patent Office, 25, Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.